V. MICROBIAL THREATS TO HEALTH AND GLOBAL COLLABORATION AGAINST INFECTIOUS DISEASES

THE GLOBAL THREAT OF INFECTIOUS DISEASES

Infectious diseases do not respect political boundaries and are usually not contained geographically. Hence, control of infectious diseases has traditionally elicited collaboration among governments, public health officials, and researchers. Increasingly, travel, human migration and commerce have contributed to the movement of infectious agents from one region of the world to another. Such introductions are often transient but they can become established with severe consequences. Historically, smallpox devastated indigenous populations in the Americas when introduced from Europe and syphilis spread through Europe after its introduction by sailors returning from the New World. Nowadays, even the pandemic spread of infections that require intimate contact, such as HIV/AIDS, can become global pandemics in a few years. The present-day interconnectedness of the global "germ pool" is well illustrated by the speed with which the worldwide dissemination of new influenza strains takes place each year. The spread of penicillin-resistant strains of gonorrhea from Southeast Asia to other parts of the world is well documented. Even when some degree of control is achieved over a disease in the United States, as with malaria, measles, and poliomyelitis, there remains the threat to Americans of exposure by importation or travel. Inadequate vaccination or otherwise inadequate prevention efforts are often discovered through such infections.

Thus, the occurrence of an infectious disease somewhere in the world threatens, to some degree, all other parts of the world. Similarly, within countries, complacency about disproportionate disease incidence in population subgroups (usually those already otherwise disadvantaged) is not only inappropriate in terms of equity but also unsound public health policy. Infections, such as tuberculosis, in any part of a society threaten the rest of that society. This means that it is in the direct interest of the United States to support the control of infectious diseases, to the maximum extent possible, not only at home but also worldwide and not only to protect U.S. travelers and military personnel, but also to decrease the risk of disease importation.

OLD AND EMERGING MICROBIAL THREATS TO HUMAN HEALTH

With the discovery of antibiotics and their effectiveness in treating some bacterial diseases, the perception may have arisen in industrialized countries in the two or three decades following World War II that infectious diseases generally posed a decreasing threat to human health. However, experience in both developing and industrialized countries shows such a view to be inaccurate. Even as some diseases have been brought under a reasonable degree of control in certain regions, infectious diseases remain the major cause of death worldwide (World Health Organization, 1992).

Careful observation and analysis show that microbial threats to health will undoubtedly continue because (with some exceptions) mankind is unlikely to make major inroads against the preponderance of infectious diseases in the next decade or so. It is entirely possible that microbial threats may intensify. In an analysis of new microbial threats, namely, those whose incidence has increased in the last two decades, the Institute of Medicine recently reported on over 50 emerging infections that threaten the United States (Institute of Medicine, 1992). Worldwide the total is probably many times greater. Emerging infections include those attributable to the introduction into the human population of a new agent (for example, as is probable with HIV), those attributable to the recognition of an infectious agent as the cause of a known disease (for example, *Helicobacter pylori*, the probable cause of gastric and peptic ulcers), and those attributable to changes in or interactions among